

ABSTRACT OF THE DISCLOSURE

An extended Maxwell pair has a pair of cylindrical gradient coils disposed coaxially, carrying equal currents in mutually opposite directions. Each of these gradient coils may be surrounded by a coaxially disposed cylindrically extended shield coil so as to cancel the magnetic field outside. For given values of radii of the gradient and shield coils, the length and the center-to-center separation of the pair of gradient coils are determined by numerically solving an equation which is derived from the condition that the currents through the gradient and shield coils should together generate a magnetic field inside with a linear gradient. The equation to be solved is derived by calculating the magnetic field by a Fourier-Bessel expansion method incorporating the condition that the shield coils do shield the magnetic field inside and cancel the field outside the system.